



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/709,575 | 05/14/2004 | Paul A. Manfredi | BUR920030054US1 | 3574 |
| 29154 7590 07/15/2008 FREDERICK W. GIBB, III Gibb & Rahman, LLC 2568-A RIVA ROAD SUITE 304 ANNAPOLIS, MD 21401 | | | | |
| EXAMINER | | | | |
| WATSON, JOY L | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1792 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 07/15/2008 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/709,575

Applicant(s)

MANFREDI, PAUL A.

Examiner

JOY WATSON

Art Unit

1792

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-8,11-14,21 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,11-14,21 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 7 of remarks, filed May 7, 2008, with respect to 35 USC 112, first paragraph, and Claim 21 has been fully considered and are persuasive due to applicant's amendment. However, upon further consideration, a new 35 USC 112, first paragraph rejection is made for Claim 21 due to applicant's amendment as discussed below.
2. Applicant's arguments see page 7 of remarks, filed May 7, 2008, with respect to Claim 24 is moot due to applicant's cancellation of the claim. The 35 USC 112, first paragraph of Claim 24 has been withdrawn.
3. Applicant's arguments filed May 7, 2008, have been fully considered but they are not persuasive.
 - a. In response to applicant's argument that there is no motivation/suggestion to combine Yang and Mahvan, it is noted that the Supreme Court decision in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007) forecloses a teaching, suggestion, or motivation (TSM) test as the only rationale in obviousness determination.
 - b. In response to applicant's argument that the nature of problems to be solved by prior art is different, the fact that applicant has recognized another

advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985)

c. In response to applicant's argument that neither Yang nor Mahvan teach or suggest all of the features of claim 1, specifically

Wherein a surface of said shield facing said substrate comprises a semi-permeable material adapted to collect said fluid and said foreign matter particles to prevent splashing and further adapted to prevent said fluid and said foreign matter particles from forming into a mist within said apparatus and being re-deposited back on said substrate. (Middle of page 11 in Remarks)

The examiner respectfully disagrees. '843 teaches a sponge (semi-permeable material) which is capable of preventing undesired material from being redeposited on said substrate (col. 2 lines 1-8). And '071 teaches shields (Fig. 1 items 26, 28, and 30) that surrounds the substrate in order to capture sputtered material (reads on mist) and prevent it from being deposited on the substrate (col. 2 lines 60-65). Additionally "adapted to" language is used. The examiner notes that "adapted to" language does not yield the claim improper, but it has been held that the recitation that an element is "adapted to" perform a function is

not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. The apparatus suggested by '843 and '071 is fully capable of performing the claimed function.

d. In response to applicant argument that Yang nor Mahvan teach or suggest the features of independent Claim 8 (bottom of page 11 of Remarks) the examiner respectfully disagrees. '843 teaches that the semi-permeable material prevents fluid ejected from the surface of the rotating substrate from forming into a mist and being re-deposited back on said substrate (col. 3 lines 1-8). '843 does teach the surface of said shield facing said semiconductor wafer comprises semi-permeable material (or sponge) having absorptive fins (projections or corrugations) (col. 2 lines 63- 65). And '071 teaches shields (Fig. 1 items 26, 28, and 30) that surrounds the substrate in order to capture sputtered material (reads on mist) and prevent it from being deposited on the substrate (col. 2 lines 60-65).

e. In response to applicant's argument that Yang nor Mahvan teach or suggest a disposable liner on a surface of said shield facing said substrate (top of page 12 of Remarks), the examiner respectfully disagrees. '843 teaches said semi-permeable material made of a sponge material (a protective covering that serves to conceal) and faces said substrate (col. 2 lines 63-65, Fig. 3). The sponge material serves as a protective covering that serves to conceal (definition

of screen) and is porous (definition of opening). It does not explicitly teach that the material is disposable, but it does teach that the semi-permeable material can be removed for maintenance when desired (col. 3 lines 37-39) because the semi-permeable material is capable of being removed it is disposable because it can be throw away. Additionally '843 teaches the semi-permeable material can be removed; therefore, it is able to be replaced if desired.

f. In response to applicant's argument that one of ordinary skill in the art at the time of the invention would not recognize that a corrugated piece of material is equivalent to a piece of material having fins (page 14 of remarks) the examiner respectfully disagrees. By applicant's definition the term corrugated states that a corrugated material has grooves and implicitly states that there are ridges. Applicant then states that the term "fin" is "a fixed structure projecting outward" (i.e. has ridges and grooves), thus the two materials are equivalent according to the claims and applicant's definitions.

In response to applicant's argument that Yang nor Mahvan teach or suggest

"wherein said disposable liner comprises a perforated material having perforations facing said substrate, said perforated material with said perforations collects said fluid and said foreign matter particles to prevent splashing"; and (3) "wherein said disposable liner further comprises

absorptive fins that provide air and fluid flow control such that said disposable liner further prevents said fluid and said foreign matter particles from forming into a mist within said apparatus and being re-deposited back on said substrate."

The examiner respectfully disagrees. '843 teaches said semi permeable material to have perforations (dents or depressions) facing said substrate (col. 2 lines 63-65, Fig. 3). '843 further teaches a sponge as the semi permeable membrane which inherently has perforations. '843 teaches said semi permeable material to have fins (projections or corrugations) (31, Fig. 3, col. 2 lines 63-65, Fig. 4 an overhead view of the apparatus, item 31). One of ordinary skill in the art knows that a fin (or baffle) and a sponge inherently controls fluid flow. Using the known technique of controlling fluid and air flow with the absorptive fins (or baffles) as taught by '843 would have been obvious to one of ordinary skill in the art. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138

g. In response to applicant's argument that Yang nor Mahvan teaches a perforated martial lining the shield with perforation facing the substrate, the examiner respectfully disagrees. '843 teaches said semi-permeable material made of a sponge material (a protective covering that serves to conceal and is

Art Unit: 1792

perforated where perforated is defined as pierced with a hole or holes as evidenced by Dictionary.com) and faces said substrate (col. 2 lines 63-65, Fig. 3).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 21 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The application does not support that the disposable liner is both perforated and finned based on applicant's specification and figures.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, 4-7, 8, 11-14, 21, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US Patent 5,868,843 known hereafter as '843) and further in view of Mahvan et al. (Us Patent 5,614,071 known hereafter as '071).

Claims 1 and 8

'843 teaches a holder (21) for holding a rotating a semiconductor substrate (22) within a shield (27) where the surface of said shield is semi-permeable (31), and a dispenser (24) to dispense solvent (cleaning fluid) on said substrate (12) (col. 2 lines 40-67). It is inherent that when the dispenser dispenses a fluid on said substrate the fluid and foreign matter particles are ejected from said substrate towards said shield ('843, col. 2 lines 18-22). Additionally '843 teaches that the semi-permeable material prevents fluid ejected from the surface of the rotating substrate from forming into a mist and being re-deposited back on said substrate (col. 3 lines 1-8). '843 does teach the surface of said shield facing said semiconductor wafer comprises semi-permeable material (or sponge) having absorptive fins (projections or corrugations) (col. 2 lines 63-65). The sponge will

Art Unit: 1792

inherently collect said fluid and prevents splashing by trapping the particles (col. 3 lines 1-10) '843 does not teach that the shield surrounds the substrate. '843 teaches a vertically orientated fin ('843 col. 2 lines 63-65) as previously discussed. One of ordinary skill in the art knows that a fin (or baffle) and a sponge inherently controls fluid flow. Using the known technique of controlling fluid and air flow with the absorptive fins (or baffles) as taught by '843 would have been obvious to one of ordinary skill in the art. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. At the time of the invention one of ordinary skill in the art would have known that the fluid dispensed on said substrate would splash and bounce back onto the substrate ('843 col. 2 lines 18-22) and the particles that bounce back are undesirable. '071 teaches shields (Fig. 1 items 26, 28, 30) that surrounds the substrate in order to capture sputtered material and prevent it from being deposited on the substrate (col. 1 lines 60-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the shape of the shield (which completely surrounds the substrate) as taught by '071, in the shield of '843, since a shield which completely surrounds the substrate captures extra material and prevents it from re-depositing on the substrate. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claims 2 and 11

Art Unit: 1792

'843 and '071 teaches the apparatus according to Claim 1, and additionally '843 teaches said semi permeable material to have perforations (dents or depressions) facing said substrate (col. 2 lines 63-65, Fig. 3). '843 further teaches a sponge as the semi permeable membrane which inherently has perforations.

Claim 4

'843 and '071 teaches the apparatus according to Claim 1, and additionally '843 teaches said semi permeable material to have fins (projections or corrugations) (31, Fig. 3, col. 2 lines 63-65, Fig. 4 an overhead view of the apparatus, item 31). One of ordinary skill in the art knows that a fin (or baffle) and a sponge inherently controls fluid flow. Using the known technique of controlling fluid and air flow with the absorptive fins (or baffles) as taught by '843 would have been obvious to one of ordinary skill in the art. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claims 5 and 12

'843 and '017 teaches the apparatus according to Claim 1. Additionally it teaches that the semi-permeable material can be removed from said shield (col. 3 lines 35-39). It does not explicitly teach that the material is disposable, but it does teach that the semi-permeable material can be removed for maintenance when desired (col. 3 lines 37-39) because the semi-permeable material is capable of being removed it is disposable

because it can be throw away. Additionally '843 teaches the semi-permeable material can be removed; therefore, it is able to be replaced if desired. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claims 6 and 13

'843 and '071 teaches the apparatus according to Claim 1 where the semi-permeable material is a required to prevent the liquid material from forming a mist and re-depositing the mist on the wafer (col. 2 lines 18-22). '843 teaches that the semi-permeable material is attached to the mounting plate and stays in place during use. The material is permanently attached so as not to be removed until the equipment is down for maintenance and therefore not a temporary structure which is replaced after a single use or during use of the equipment.

Claim 7 and 14

'843 and '071 teaches the apparatus according to Claim 1 where the semi-permeable material is a sponge. This apparatus rotates and dispenses a fluid on said substrate the excess fluid will be flung onto the sponge. It is inherent that the sponge will collect said fluid. The fluid will then begin to drain down said semi-permeable material due to gravity.

9. Claims 21 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over '843, and further in view of '071 and as evidenced by Dictionary.com.

Claim 21

'843 teaches a holder (21) for holding a rotating a semiconductor substrate (22), a shield for the substrate (27) where the surface of said shield is semi-permeable (31), and a dispenser (24) to dispense solvent (cleaning fluid) on said substrate (12) (col. 2 lines 40-67). It is inherent that when the dispenser dispenses a fluid on said substrate the fluid and foreign matter particles are ejected from said substrate towards said shield ('843, col. 2 lines 18-22). Additionally '843 teaches that the semi-permeable material prevents fluid ejected from the surface of the rotating substrate from forming into a mist and being re-deposited back on said substrate (col. 3 lines 1-8). Additionally '843 teaches said semi-permeable material made of a sponge material (a protective covering that serves to conceal and is perforated where perforated is defined as pierced with a hole or holes as evidenced by Dictionary.com) and faces said substrate (col. 2 lines 63-65, Fig. 3). '843 does teach the surface of said shield facing said semiconductor wafer comprises semi-permeable material (or sponge) having absorptive fins (projections or corrugations) (col. 2 lines 63-65). The sponge will inherently collect said fluid and prevents splashing by trapping the particles (col. 3 lines 1-10). '843 does not teach that the shield surrounds the substrate. '843 teaches a vertically orientated fin ('843 col. 2 lines 63-65) as previously discussed. One of ordinary skill in the art knows that a fin (or baffle) and a sponge inherently controls fluid flow. Using the known technique of

Art Unit: 1792

controlling fluid and air flow with the absorptive fins (or baffles) as taught by '843 would have been obvious to one of ordinary skill in the art. It does not explicitly teach that the material is disposable, but it does teach that the semi-permeable material can be removed for maintenance when desired (col. 3 lines 37-39) because the semi-permeable material is capable of being removed it is disposable because it can be throw away. Additionally '843 teaches the semi-permeable material can be removed; therefore, it is able to be replaced if desired. '843 does not teach that the shield surrounds the substrate. At the time of the invention one of ordinary skill in the art would have known that the fluid dispensed on said substrate would splash and bounce back onto the substrate ('843 col. 2 lines 18-22) and the particles that bounce back are undesirable. '071 teaches shields (Fig. 1 items 26, 28, 30) that surrounds the substrate in order to capture sputtered material and prevent it from being deposited on the substrate (col. 1 lines 60-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the shape of the shield (which completely surrounds the substrate) as taught by '071, in the shield of '843, since a shield which completely surrounds the substrate captures extra material and prevents it from re-depositing on the substrate. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Art Unit: 1792

Claim 26

'843 and '071 teaches the apparatus according to Claim 21 where the semi-permeable material is a sponge. This apparatus rotates and dispenses a fluid on said substrate the excess fluid will be flung onto the sponge. It is inherent that the sponge will collect said fluid. The fluid will then begin to drain down said semi-permeable material due to gravity. It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1792

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOY WATSON whose telephone number is (571)270-1267. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLW

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792